

Application No. 10/029,961  
Amendment filed April 29, 2004  
Reply to Office Action dated January 29, 2004

Attorney Docket No. 030681-349  
Page 2 of 15

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (previously presented): A perpendicular magnetic recording disk including an underlayer between a substrate and a perpendicular magnetic recording layer for inducing perpendicular orientation of the perpendicular magnetic recording layer, and an intermediate soft magnetic layer between the underlayer and the perpendicular magnetic recording layer for forming closed magnetic loops together with the perpendicular magnetic recording layer, the perpendicular magnetic recording layer having a thickness in the range where the ratio of perpendicular coercivity  $H_c$  to maximum perpendicular coercivity  $H_o$  decreases with reduced thickness of the perpendicular magnetic recording layer.

Claim 2 (canceled).

Claim 3 (previously presented): The perpendicular magnetic recording layer of claim 1, wherein, in the range of thickness of the perpendicular magnetic recording layer, the rate of variation of the ratio of perpendicular remanent magnetization of maximum perpendicular remanent magnetization is greater than of the ratio of perpendicular coercivity  $H_c$  to maximum perpendicular coercivity  $H_o$ .

Claim 4 (previously presented): The perpendicular magnetic recording layer of claim 1, wherein, in the range of thickness of the perpendicular magnetic recording layer, a noise level constant of proportionality  $\alpha$  expressed as the following formula decreases with reduced thickness of the perpendicular magnetic recording layer:

$$\alpha = \frac{4\pi Mr}{Hc}$$

where  $Mr$  is the perpendicular remanent magnetization and  $Hc$  is the perpendicular coercivity.

Application No. 10/029,961  
Amendment filed April 29, 2004  
Reply to Office Action dated January 29, 2004

Attorney Docket No. 030681-349  
Page 3 of 15

**Claim 5 (previously presented):** The perpendicular magnetic recording disk of claim 1, wherein the perpendicular magnetic recording layer is formed of a CoCr alloy.

**Claim 6 (previously presented):** The perpendicular magnetic recording disk of claim 5, wherein the perpendicular magnetic recording layer further comprises at least one material selected from the group consisting of B, Pt, Ta, V, Nb, Zr, Y, and Mo.

**Claim 7 (original):** The perpendicular magnetic recording disk of claim 6, wherein the perpendicular magnetic recording layer has a thickness of 20-50 nm.

**Claim 8 (currently amended):** The perpendicular magnetic recording disk of claim [[2]] 1, wherein the intermediate soft magnetic layer is formed of a NiFe alloy.

**Claim 9 (original):** The perpendicular magnetic recording disk of claim 8, wherein the intermediate soft magnetic layer further comprises at least one material selected from the group consisting of Nb, V, Ta, Zr, Hf, Ti, B, Si, and P.

**Claim 10 (original):** The perpendicular magnetic recording disk of claim 9, wherein the intermediate soft magnetic layer has a thickness of 3-30 nm.

**Claim 11 (previously presented):** The perpendicular magnetic recording disk of claim 1, further comprising a protective layer and a lubricant layer sequentially on the perpendicular magnetic recording layer.

Claims 12-15 (canceled).